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(71) Applicants

John Leslie Graham McNab
23 Commercial Street, Marleston,
State of South Australia, Australia

Keith Edward Ople
23 Commercial Street, Marleston,
State of South Australia, Australia

(72) Inventors

John Leslie Graham McNab
Keith Edward Ople

(74) Agent and/or Address for Service

Venner Shipley & Co
368 City Road, London, EC1V 2QA

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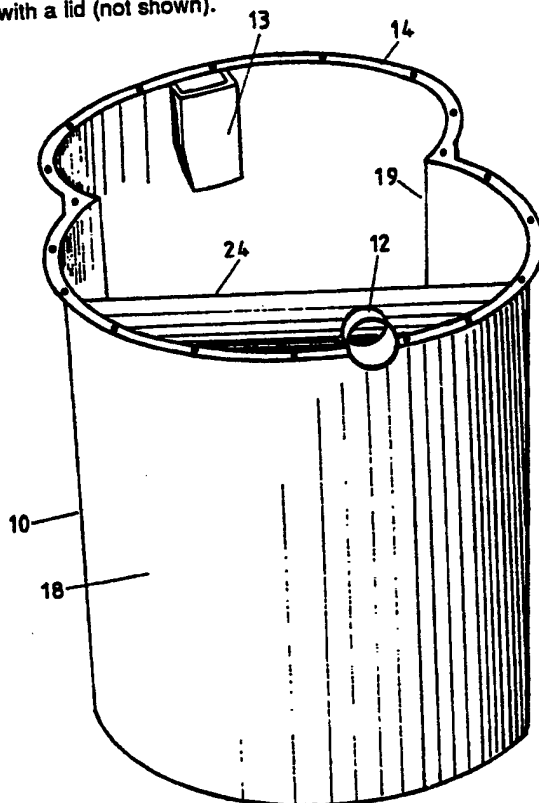
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E1T
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(54) Septic tank

(57) A septic tank comprises a pair of portions (18) which, in plan, are part-circular, and which intersect in upwardly extending inwardly directed ribs (19). An inlet tube (12) is located at one end of the tank and an outlet baffle (13) at the other. The tank is also provided with a lid (not shown).

FIG 3



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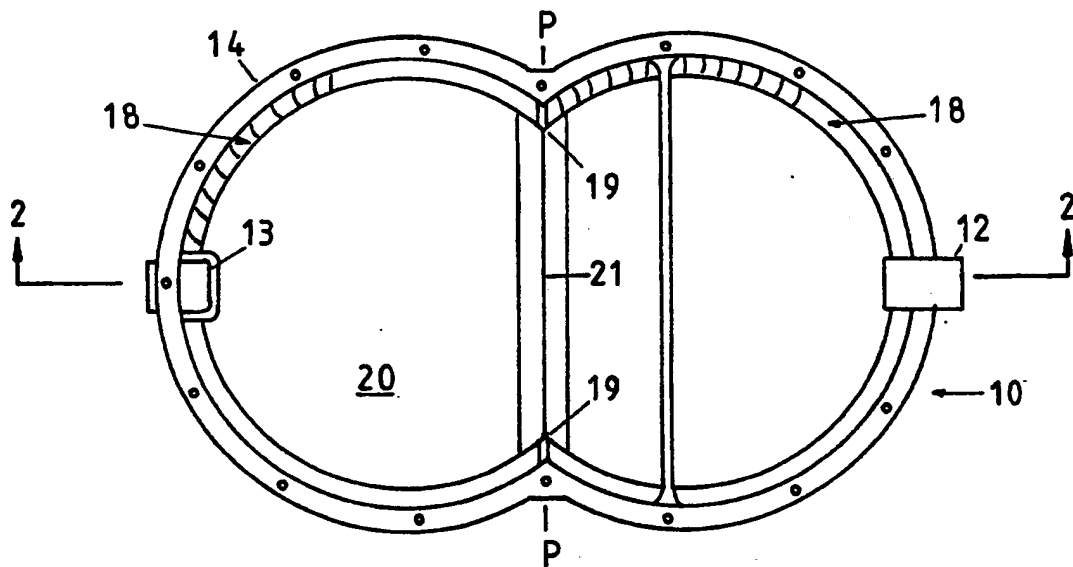


FIG 1

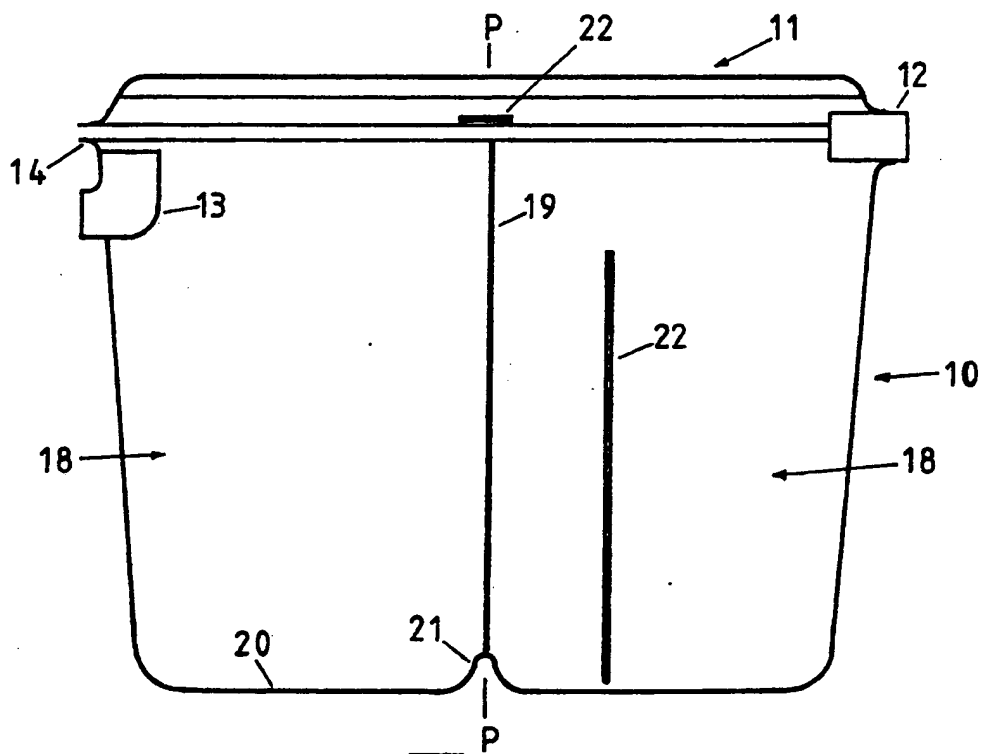
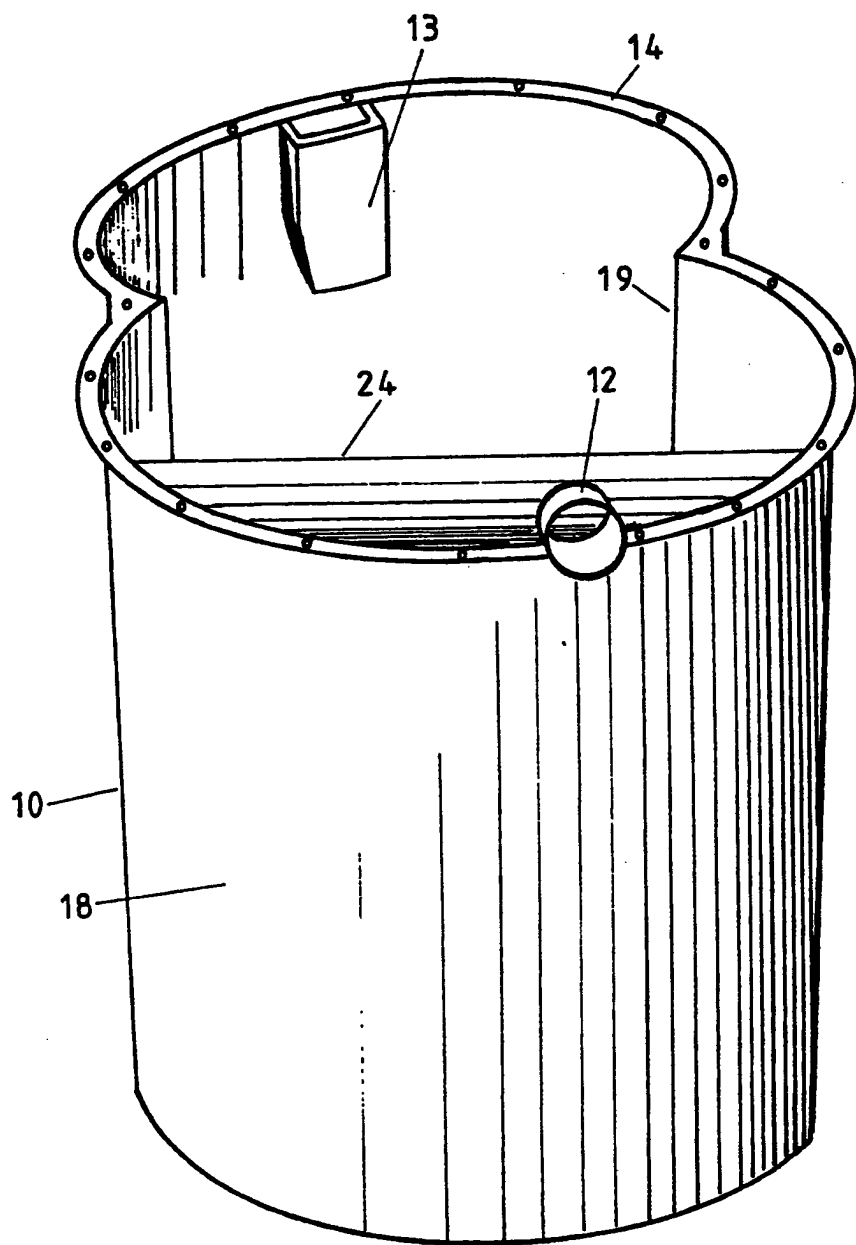


FIG 2

**FIG 3**

A TANK CONSTRUCTIONDESCRIPTION

This invention relates to an improved construction for a tank, for example, for a septic tank.

- It has been found that space limitations frequently require that tanks have a generally rectangular shape
5. in plan, and a cylindrical tank having its cylinder axis vertical is likely to be too wide for many sites.

- Large diameter vertical cylindrical tanks are cost effective with respect to materials used for the volume contained with respect to tensile stresses, providing
10. what is often called hoop strength, but are liable to local buckling under compression forces which can be applied externally, if made of thin wall semi-flexible material such as fibreglass reinforced plastics.

- Rectangular tanks with generally flat sides can
15. meet many space limitations, however forces on the sides of such tanks require the sides to have enough material of sufficient strength to provide the required stiffness to prevent distortion, this being much greater than needed for cylindrical tanks.

20. The effects of stresses in flat sided tanks can only be withstood by flexible materials such as plastics if large amounts of plastics material, or ribbed walls, are used for construction. Rigid materials such as steel, cement and masonry have considerable mass, but
25. for that reason handling and installing are more difficult than tanks made of lightweight flexible plastic materials such as glass reinforced polyester resins.

Thin wall fibreglass reinforced plastics material must be made sufficiently rugged to withstand the hydraulic pressures imparted, and if that occurs with the previously used configuration or tank-shape, the

5. material costs become excessively high. An object of this invention is to provide an improvement in the design of the shape of a tank such that it need not necessarily be wholly cylindrical, or have excessively thick walls.

Another object of this invention is to provide a

10. tank which has a generally rectangular shape and which uses the advantages of circular form and thus can be manufactured from flexible materials without elaborate stiffening. It follows that there would also be cost savings in using rigid materials although there would be

15. extra mass compared to most plastic materials.

Since appropriately selected plastic material can also provide resistance to corrosion and chemical attack, it is more suited to many tank applications.

As said above, a circular tank has much greater

20. strength because of its "hoop strength" than say a vessel having flat sides, and in an embodiment of this invention advantage is taken of this phenomenon, in that a fibreglass tank comprises side walls, base walls and a lid, characterised in that: the side walls comprise

25. a pair of portions which, in plan, are part-circular, and which intersect in upwardly extending inwardly directed ribs.

The inwardly directed ribs, in being flanked by the side walls curving outwardly therefrom, constitute shallow beams which resist deflection, and this can be enhanced by a load member (which can be the lid itself) joining the ribs at their upper ends. The load member must be able to function either as a tension, or as a compression member.

Since the side wall upper portion of the container portion is constrained by the load member against inward or outward deflection due to hydraulic pressures, and the lower portion also constrained by the base of the container, the hoop strength will be effective over most if not all of the depth of the container portion, even though some of the depth may not benefit as much as the base or mouth.

An embodiment of the invention is described hereunder in some detail with reference to, and is illustrated in, the accompanying drawings, in which:

Fig. 1 is a plan view of the container portion of a tank,

Fig. 2 is an "exploded" sectional view showing a central section through the container walls and also through the tank lid, taken on line 2-2 of Fig. 1, and

Fig. 3 is a perspective view of the container portion.

In this embodiment, a septic tank comprises a container portion 10 and a lid 11. The container portion

10 and lid 11 both locate over an inlet tube 12 at one end, and an outlet baffle 13 exists at the other.

Both the container portion 10 and lid 11 are provided with outstanding flanges respectively designated 5. 14 and 15 at the mouth of the container portion 10, and these flanges become contiguous when bolted together by fasteners, or cemented together.

The shape of the container portion 10 and lid 11 both include part circular portions designated 18, and 10. these intersect in upwardly extending inwardly directed ribs 19, on a plane P-P which is a chordal plane to both the part round portions. The base 20 at the location of the chordal plane also has an upwardly projecting rib 21, while the lid 11 has a tension member 22 extending 15. transversely across it, which effectively joins the upper ends of the ribs 19.

The hoop strength of the part round portions would be lost if it were not for the base 20 and its rib 21 at the lower portions of the container walls, and for 20. the tension member 22 extending across the upper portion, but the existence of these two very inexpensive moulded portions preserve most although not all of the hoop strength of the part circular container portions 18 which make up the tank. A baffle plate 24 extends between 25 opposite side walls of the tank.

Since these mechanical properties are preserved, for design purposes the tank will approximate two separate and independent circular tanks and therefore

the need for excessive thickness of the walls of the tanks is averted.

One of the problems which has been encountered heretofore has been the cost of transport, but this can be reduced if the side walls of the container portion 10 are upwardly divergent as shown. The inlet tube 12 and baffle 13 can be separate and can be positioned on site.

CLAIMS

1. A septic tank having side walls, a base wall and a lid, characterised in that the side walls comprise a pair of portions which, in plan, are part-circular, and which intersect in upwardly extending inwardly directed ribs.
5. 2. A septic tank according to claim 1 further comprising a load member extending across the tank and effectively joining the upwardly extending ribs at their upper ends.
3. A septic tank according to claim 2 further comprising a transverse rib extending across the base of the tank between lower ends of the upwardly extending ribs.
4. A septic tank according to claim 2 or claim 3 further comprising outstanding flanges on both the tank and the lid, and fasteners for securing the flanges together face to face, said load member extending between
5. flanges of the lid.
5. A septic tank according to any preceding claim wherein the side walls diverge in an upward direction.
6. A septic tank according to any preceding claim further comprising an inlet tube at one end of the tank, being partly engaged by a tank wall and partly engaged by the lid, and an outlet baffle at the other end of the
5. tank extending into the tank from a tank wall.

7. A septic tank as claimed in any of the preceeding claims, comprising a plurality of base walls.

8. A septic tank substantially as hereinbefore described with reference to and as illustrated in the

5. accompanying drawings.

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